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1 (currently amended). A method of inductive learning comprising providing a computer that is programmed:

~~receiving~~ to receive training data , including at least one of archived data, simulated nominal data and off-nominal data;

~~providing~~ to provide vectors having a set of parameters ~~based on said~~ determined from the training data; and

~~generating~~ to generate a cluster database comprising clusters ~~, said clusters being~~ that are associated with respective ranges of values for at least a subset of ~~said~~ the set of parameters.

2-7 (canceled).

8 (currently amended). The method of claim 1 wherein said process of generating comprises:

determining a deviation distance between ~~one of said~~ a selected test vector[[s]] and one of said clusters, and

producing a new cluster including the test vector, ~~if said~~ when the distance exceeds a threshold value.

9 (currently amended). The method of claim 1 wherein said process of generating comprises:

determining a deviation distance between ~~one of said~~ a selected test vector[[s]] and at least one of said clusters, and

expanding ~~said one of said~~ the at least one cluster[[s]] to include ~~said~~ the test vector when ~~said~~ the distance is less than or equal to a threshold value.

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10 (currently amended). The method of claim 1 , wherein said computer is
further ~~comprising~~ programmed:

to index~~ing~~ said clusters of said cluster database based on a distance of
each of said clusters from a predetermined indexing reference point, and

to organize ~~organizing~~ said clusters into a data structure based on ~~said~~ the
indexing.

11 (currently amended). A method of monitoring a system comprising providing
a computer that is programmed:

to provide ~~providing~~ a cluster database comprising clusters ~~, said clusters~~
~~being~~ that are associated with respective ranges of values for at least a subset of
a set of cluster parameters;

to receive at least ~~receiving~~ one ~~or more~~ monitored-system vector[[s]]
having monitored-system parameters; and

to determine ~~determining~~ whether ~~said~~ the at least one monitored-system
vector is contained in one of ~~said~~ the clusters based on at least a subset of ~~said~~
the monitored-system parameters and ~~said at least a~~ the subset of ~~said~~ the cluster
parameters.

12 (currently amended). The method of claim 11, wherein said computer is
further ~~comprising~~ programmed:

~~if~~ when at least one of said monitored-system vectors is not contained in
one of said clusters, to determine ~~determining~~ a distance of ~~said~~ the at least one
monitored-system vector from a nearest of said clusters, ~~wherein said distance is~~
~~associated~~ and to associate the determined distance with a severity of a
deviation of said at least one monitored system vector from at least one of said
clusters.

13 (currently amended). The method of claim 12 wherein said computer is
further programmed ~~determined distance provides~~:

to provide ~~providing~~ a comparison result , associated with said
determined distance, for ~~each~~ said at least one monitored-system vector ~~, further
comprising : and~~ .

~~supplying said at least one monitored-system vectors and said comparison
result associated therewith to another learning application.~~

14 (currently amended). The method of claim 11, wherein said computer is
further ~~comprising~~ programmed:

to examine ~~examining~~ said monitored-system vectors to determine if ~~any~~
at least one of said parameters is erroneous; and

~~if any~~ when at least one of said monitored system parameters ~~of one of
said monitored-system parameters~~ is erroneous, to adjusting ~~said~~ the erroneous
parameter such that ~~said~~ the erroneous parameter will match any range specified
for ~~said~~ the parameter in any cluster of said cluster database.

15 (currently amended). The method of claim 11 , wherein said computer is
further ~~comprising~~ programmed:

to provide ~~providing~~ an additional ~~cluster~~ database ~~, the~~ of clusters, ~~of
said additional cluster database being~~ associated with respective ranges of
values for at least a subset of said set of parameters, ~~said~~ the additional cluster
database being annotated with diagnostic information; and

~~if~~ when at least one of said monitored-system vectors is not included in
~~one~~ any of said clusters, to compare ~~comparing said~~ at least one of said

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monitored-system vectors with ~~said~~ at_ least one of the clusters of ~~said~~ the

additional cluster database.

16-30 (canceled).

31 (currently amended). An apparatus for inductive learning comprising a_

·computer that is programmed:

    ~~a computer; and~~

    ~~one or more computer programs, executed by said computer, for:~~

    ~~receiving~~ to receive training data , including at least one of archived data,_

simulated nominal data and off-nominal data;

    ~~providing~~ to provide at least one vector[[s]] having a set of parameters

based on said training data; and

    ~~generating~~ to generate a cluster database comprising clusters ~~, said~~

~~clusters being~~ associated with ~~respective~~ selected ranges of values for at least a

subset of ~~said~~ the set of parameters.

32-37 (canceled).

38 (currently amended). The apparatus of claim 31, wherein said process of

generating comprises:

    determining a deviation distance between ~~one of said~~ a test vector[[s]]

and one of said clusters, and

    producing a new cluster if ~~said~~ the deviation distance exceeds a threshold

value.

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39 (currently amended). The apparatus   of claim 31 wherein said <u>process of</u>

generating comprises:

determining a deviation distance between ~~one of said~~ <u>a test</u> vector[[s]]

and <u>at least</u> one of said clusters, and

expanding ~~said~~ <u>the at least</u> one of said clusters to include ~~said~~ <u>the test</u>

vector when ~~said~~ <u>the deviation</u> distance is less than or equal to a threshold value.

40 (currently amended). The apparatus of claim 31, wherein said ~~one or more~~

~~computer programs, executed by said computer, further comprises, for~~ <u>computer</u>

<u>is further programmed</u>:

~~indexing~~ <u>to index</u> said clusters of said cluster database based on a

distance of each of said clusters from a predetermined indexing reference point.

41 (currently amended). An apparatus for monitoring a system, comprising

a computer, having a memory storing a cluster database comprising

clusters, ~~said clusters being~~ associated with respective ranges of values for at

least a subset of a set of cluster parameters , where the computer is programmed

~~, and~~ :

~~one or more computer programs, executed by said computer, for:~~

~~receiving~~ <u>to receive</u> one or more monitored-system vectors having

monitored-system parameters; and

~~determining~~ <u>to determine</u> whether ~~said~~ <u>the</u> monitored-system vector is

contained in one of ~~said~~ <u>the</u> clusters based on at least a subset of ~~said~~ <u>the</u>

monitored-system parameters and ~~said~~ <u>the</u> at least a subset of ~~said~~ cluster

parameters.

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42 (currently amended). The apparatus of claim 41, ~~determining also for, if~~ wherein said computer is further programmed so that, when at least one of said monitored-system vectors is not contained in ~~one~~ any of said clusters, said ~~determining~~ computer determines a distance of ~~said~~ the at least one monitored-system vector from ~~the~~ a nearest of said clusters, wherein ~~said~~ the distance is associated with a severity of a deviation of said at least one monitored system vector from at least one of said clusters.

43 (currently amended). The apparatus of claim 42 wherein said computer is further programmed so that said determined distance provides a comparison result for each monitored-system vector ~~, said one or more computer programs further comprising:~~ with _____ .

~~supplying the monitored-system vectors and their associated comparison result to another learning application.~~

44 (currently amended). The apparatus of claim 41, ~~said one or more computer programs also~~ wherein said computer is further programmed for examining said monitored-system vectors, and, ~~if any~~ when at least one parameter of one of said monitored-system vectors is erroneous, ~~said examination adjusts said~~ the at least one erroneous parameter is adjusted such that ~~said~~ the at least one parameter will match any range specified for ~~said~~ the parameter in any cluster of said cluster database.

45 (currently amended). The apparatus of claim 41, wherein said computer is further programmed:

to ~~memory also~~ store[[s]] an additional ~~cluster~~ database of clusters that are ~~the clusters of said additional cluster database being~~ associated with

respective ranges of values for at least   a subset of said ~~set of~~ parameters, ~~said~~ the additional cluster database being annotated with diagnostic information; and

~~wherein, if~~ when one of said monitored-system vectors is not included in ~~one~~ any of said clusters, ~~said determining~~ to compare[[s]] said at least one of said monitored-system vectors with ~~said~~ the clusters of ~~said~~ the additional cluster database.

46 (new). The method of claim 8, wherein said computer is further programmed to determine said deviation distance by dividing said distance between said test vector and said one or said clusters by a value representing a range of values of at least one variable in said one of said clusters.

47 (new). The method of claim 9, wherein said computer is further programmed to determine said deviation distance by dividing said distance between said test vector and said one or said clusters by a value representing a range of values of at least one variable in said at least one of said clusters.

48 (new). The apparatus of claim 38, wherein said computer is further programmed to determine said deviation distance by dividing said distance between said test vector and said one or said clusters by a value representing a range of values of at least one variable in said one of said clusters.

49 (new). The apparatus of claim 39, wherein said computer is further programmed to determine said deviation distance by dividing said distance between said test vector and said one or said clusters by a value representing a range of values of at least one variable in the at least one of said clusters.